Cross-Border Data Exchanges : The Rise of Platform Economy in Asia

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Abstract

Transnational flows of goods, capital, and labor are accurately monitored, and are included by governmental agencies in their economic metrics as critical information used by policy makers. Although transnational flows of data can be intuitively identified as equally important, they have been so far largely ignored by economists and are poorly monitored by public authorities. In this paper, we study the extent to which local and foreign intermediation platforms in Asia have developed their activities in Asia, and their contribution to cross-border data exchanges. We rely on preliminary measure of transnational as well as global data exchanges in Asia. We identify various patterns; China is mostly relying on national platforms, while Japan is highly dependent from platforms based in the United States, Korea and Taiwan are experiencing some sort of balance between national and foreign platforms.

1. Introduction

The emergence of the digital industry, with giants that now compete with the oil industry for the top ranks in market capitalisation (Apple, Google and Microsoft are among the top 5) has changed the global economic picture. Beyond transnational movements of goods and services, transnational movements of data have become extremely important in size and economic impact.

Although there is a clear American domination over this industry, Asia is an extremely interesting field of study. First and foremost because China is becoming a leader, with one third of the world top 50 internet platforms by number of consultations, the others being mostly based in the United States. But beyond that, China and other East Asian countries are of great importance because the regional influence of local platforms is more developed than in Europe or other parts of the world.[1]

The aim of the paper is twofold. First, we measure market shares of the biggest global and local firms in terms of consultation, and bilateral information flows on the basis of information on the number of visits on the web. This quantification enables to assess the degree of dependence of China and other Asian countries vis-à-vis US firms, which interestingly differs from the current situation in European countries. Second, we identify the companies that are the main Asian players in the intermediation platform industry, mostly in China, Hong Kong, Japan, Korea, and Taiwan, and their interactions with the major companies in the US.

The movement of data on platforms results from the online activity of people on services offered by these corporations of the digital age. These services essentially reach the world population and, as disruptive innovations, transform an increasing number of economic sectors. Hiring a taxi or booking an accommodation can now be made on remote global platforms such as Uber or Airbnb. Access to knowledge relies largely on global tools including search engines such as Google or cooperative encyclopaedia such as Wikipedia. Communication between people is ensured on global platforms that reach people in the hundreds of millions, such as Facebook.

These digital platforms benefit from the trust people have in the services they offer. The enormous volume of information they collect, process, and use is a key determinant of their profitability, and their ability to use the big dataset they control is at the core of their business model. Simultaneously, an active public debate takes place in most countries on issues related to privacy and surveillance in particular. The main actors in these fields are intermediation platforms, able to connect people to services with an efficiency never achieved before.

[1] A number of firms based in Russia are also important players in Central Asia, which justify putting this country in an Asian league rather than a European one. However, Russian firms do not appear in the top ranking of East Asian or ASEAN countries (while only one Chinese firm is in the top 25 in Russia).

Although platforms belong to well-established corporations, their services often conflict with laws enforced on the territories on which they are used. The transportation platform Uber, for instance, faces legal actions, and is even banned in many places. It is nevertheless widely used even in territories where it is officially banned. Platforms allow the development of services that are not developed locally or would be difficult to trust locally. Political activists often rely on foreign, mostly American, platforms for their communication. Commercial activities, often invisible to national taxation services, take place on platforms managed from remote locations.

Assessing the impact of platforms - be it economic or political - remains an open challenge [FFG16]. Only recently have academics started to investigate the power of platforms. Airbnb, for instance, has been proven to influence the hotel business in Texas [Zer13]. A rapidly growing academic literature that builds on the standard analytical framework of network economics (see for instance [Shy11] for a survey) is currently devising a specific approach of the intermediation platform industry, explaining the sudden emergence of monopolies or oligopolies, and conjecturing on the implication of such trends (e.g. [Pol10]). We can distinguish two streams of research in this emerging sub-field of "platform economics". The first stream considers theoretical issues such as competition in two-sided networks [RoT03, PaV05, Wey10], platform neutrality [EcH12], other strategic use of download limit by a monopoly platform [EcH15]. The second stream is dedicated to empirical issues such as assessing strategies for two-sided networks [EiV06, Eva11], or investigating the governance of the internet [Pol10, Mai12a, Mai12b, Mai12c].

The major gaps in the literature are related to the identification of the determinants of data flows, the evaluation of the macroeconomic impact of the disruptive activity of intermediation platforms, and the political implications of the development of the cyberspace in terms of national sovereignty. Studying the power of platforms demands to reflect on concepts such as sovereignty and to design models suitable to capture and foresee the organisation of the digital age.

The notions of space and territory are growing increasingly complex in the digital age. Yet, they remain central to the political organization of our societies. In the international system inherited from the Treaty of Westphalia, each nation-state has sovereignty over its territory and domestic affairs. Sovereignty is a modern concept of political authority which designates "supreme authority within a territory".[2] The relative importance of non US-based platforms in China, and to a lower degree in other Asian countries, suggests that national or local political authorities are aware of the importance of the cyberpower, which Joseph Nye defines cyberpower as "a set of resources, that relate to the creation, control and communication of electronic and computer-based information - infrastructures, network, software and human skills" [Nye14]. This notion probably plays a role in the development of digital activities both within the national territory and in the rest of the world.

[2] http://plato.stanford.edu/entries/sovereignty/

We lack a geographic analysis of the location and the activities of intermediation platforms and how they challenge and shape sovereignty at the digital age. This analysis exceeds the scope of traditional analyses of the web which focus on its structure from the point of view of hyperlinks or the the connectivity of hosts [Lat08]. Although the market power of platforms can be regarded as part of intangible assets accumulated in an national economy, metrics measuring the influence of digital activities on economy on the whole are missing. OECD as well as the International Telecom Union (ITU), for instance, provide statistics about the use of telecommunications and, for example the Internet penetration. These measures appear to be inconsistent [Ben15] and are furthermore not enable to assess the cyber-wealth of nations. Metrics dedicated to capture power relations in the digital age are thus necessary.

2. Methodology, metrics, data and indicators

A large spectrum of metrics is available to measure exchanges between countries, involving economic and financial figures. This is not yet the case for the digital economy, as data are not taken into account in the exchanges between countries. There are clear reasons for that. It is only recently that data have become of paramount importance in the exchanges. Moreover, it is not completely clear at this point what metric should be used, and how data flows should be measured. We propose a method, which is rather coarse, but provides interesting insights into the data flows between countries, and consequently the influence and the dependencies among them.

In our investigation of cross-border data exchanges, we have considered about one hundred countries for which data on web traffic is available in particular on the Alexa platform[3]. Data are actually exchanged on platforms of the digital economy. In the present paper, we focused on platforms accessible online through browsers. Our approach does not take into account mobile connections. For this reason, we fail to identify some major actors receiving most of their connections from mobile terminals. However, considering available information on the origins of the apps, our conjecture is that the results we present extend essentially to exchanges relying on mobile apps.

Throughout our study, we define a "*platform*" as a set of services offered in an integrated online environment with unique identification - which can include for instance communication services or social networks. Platforms ensure gatekeeping functions for their users, directing them to the right services. They also create an ecosystem on which third parties can offer their services taking advantage of the basic services of the platform, and constructing their offering over the API of the platform.

[3] alexa.com

A platform belongs to a "*corporation*", an economic entity - such as Alphabet or Facebook. A platform may be distributed over several "*sites*" - such as google.com, google.fr, etc. identified by their URL. In the sequel, we group together the metrics of the different sites belonging to the same platform. The list of countries taken into account is available at: http://www.alexa.com/topsites/countries. As for Asia, we mostly focus in this paper on China, Hong Kong, Japan, Korea, and Taiwan.

For each country, Alexa publishes the list of the 500 top sites in terms of rank. For this paper, we have considered the top 25 websites, based on their Alexa ranking. Alexa's Traffic Ranks are based on the traffic data provided by users in Alexa's global toolbar panel over a rolling three months period. A site's rank is based on a combined measure of *Unique Visitors* and *Pageviews*. Unique Visitors are determined by the number of unique Alexa users who visit a site on a given day. Pageviews are the total number of Alexa user URL requests for a site.

For each of the top 25 websites in the selected countries considered in this paper, we retrieved the following data[4]:

- *Number of visits* received by a website over the last 30 days. This includes multiple visits from the same user;
- *Website's global rank*;
- *Website's country rank*;
- *Top 10 Countries* from where visitors come to this website, along with the percentage share of visitors of each country.

We identified 1349 platforms belonging to the top 25 websites of at least one country in Alexa. The list of platforms in the global top 25 is in Table 1. For each platform, we identify the country in which their headquarter is located, and we assess the influence of each platform in foreign countries (countries other than the one where the headquarter is located). We also calculate the number of countries where a given platform is listed in the top 25, top 50 and top 100.

Then, we measure the influence of a country as the cumulated influence of the platforms it headquarters. Although it is disputable to relate countries and platforms on the only basis of their headquarter, since other aspects could be taken into account, such as the physical location of its servers, or the existence of other industrial or capitalistic linkages, headquarters have a fundamental legal impact, in particular related to surveillance policies. Moreover, this simple criterion allows obtaining meaningful results.

Measuring the influence of a country is of fundamental importance for understanding which countries have an influence on others whether globally or in a regional area. It also enables measuring the dependency of countries, which are mostly influenced by others, that is

[4] Most of these data have been retrieved from alexa.com. The number of visits received by a website has been retrieved from trafficestimate.com. Data were retrieved on november 6, 2015. Data remain copyright of Alexa and Trafficestimate.

those that depend more on foreign platforms than on national ones. Table 1 shows the main platforms in the world.

Table 1: Top 25 global websites in number of consultations (local versions omitted)[5]

Domain	url	Global	Country	Year	type
Google	google.com	1	U.S.	1998	Search engine
Facebook	facebook.com	2	U.S.	2004	Social network
YouTube	youtube.com	3	U.S.	2005	Video sharing
Baidu	baidu.com	4	China	2005	Search engine
Yahoo!	yahoo.com	5	U.S.	1994	Portal
Amazon	amazon.com	6	U.S.	1994	E-commerce and cloud computing
Wikipedia	wikipedia.org	7	U.S.	2001	Encyclopedia
Tencent QQ	qq.com	8	China	1999	Portal
Twitter	twitter.com	9	U.S.	2006	Social network
Taobao	taobao.com	11	China	2003	Online shopping
Windows Live	live.com	12	U.S.	2005	Email, web services and software suite
Sina Corp	sina.com.cn	13	China	1998	Portal
LinkedIn	linkedin.com	14	U.S.	2003	Social network
Sina Weibo	weibo.com	16	China	2009	Social network
eBay	ebay.com	17	U.S.	1995	Online auctions and shopping
Yandex	yandex.ru	19	Russia	1997	Search engine
Hao123	hao123.com	20	China	1999	Search engine
VK	vk.com	21	Russia	2006	Social network
Bing	bing.com	22	U.S.	2006	Search engine
t.co	t.co	24	U.S.	2010	URL shortening for links posted to Twitter
MSN	msn.com	25	U.S.	1995	Portal

[5] Source: alexa for the global ranking; Wikipedia for year of creation and type of website.
Note: information retrieved in November 2015. Information omitted for the local versions of Google and Yahoo! (Google India rank 10; Yahoo! Japan rank 15; Google Japan rank 18; and Google Germany rank 23).

We are aware that our measure of influence is biased to the extent that we only assess the influence of platforms belonging to the top 25 websites of at least one country. Yet, we consider this measure meaningful because the top 25 sites represent about half of the traffic of the top 500 sites in average in most countries. The top 25 websites of each country therefore account for the majority of data flows and hence give a good estimate of the overall situation. From our data analysis, we note that a power law governs the relation between a site's rank and the amount of visits it receives. We think that this power law justifies our focus on top 25 websites.

3. The major players in Asia

This section documents the spatial polarization of the top 25 and top 100 websites by volume of visits at the global level and in Asia. It is well known that a majority of the platforms of the global top 25 are headquartered in the United States; but China and Russia also play a significant role in the web landscape. Table 1 presents the global ranking by number of visits. Local versions of U.S. based websites such as Google India and Yahoo! Japan are omitted. This leaves only 22 sites. The United States have 13 websites whose servers are on their territory, which are therefore subject to some form of control by the U.S. administration, while China and Russia have 5 and 2 of the top 25 sites on their territory, respectively. The power law that characterizes the market share of intermediation platforms reinforces the polarization of data flows around the United States in most parts of the world.

The fact that all the websites listed in the top 25 are intermediation platforms further enhances the spatial concentration of information flows in a handful of countries.[6] This entails a dual structure in the setting of rules and norms related to the international flows of digital informations. The United States, China, and to some extend Russia, are involved in the definition of the rules of the game, while all other countries, including Japan, South Korea, and the biggest European economies have at most a marginal influence on the governance of the internet's platform or the use of private data collected by intermediation platforms.

The dominant market shares in the global top 25 of U.S. based platforms may give the impression that they benefit from the combined effects of a first mover advantage and spatial agglomeration spillovers in the Bay Area. However, the information presented on Figure 1 regarding the dispersion of the global top 100 platforms[7] by year of creation clearly indicates

[6] Only five news websites, which can be regarded as non-platform websites owing to their relatively poor quality of information collected, appear in the top 100 global ranking. Out of these five websites, two are based in China: Guangming Daily (gmw.com; rank 55), and Xinhua News Agency (rank 80), which are press organs close to the Chinese Government. The three others are CNN (rank 74), BBC (rank 75), and the New York Times (rank 96).

[7] Excluding local versions of U.S. based platforms such as Google India, Yahoo! Japan, and Amazon Japan. We also omitted media websites that usually access information on users that have a lower economic value than intermediation platforms

that several recent entries of U.S., China and Russia based platforms have been successful, in some case with a presence in the top 25 or 50. It also appears that several platforms based in either India, Japan, Korea, or Taiwan are present in the top 100, albeit in the bottom 50.

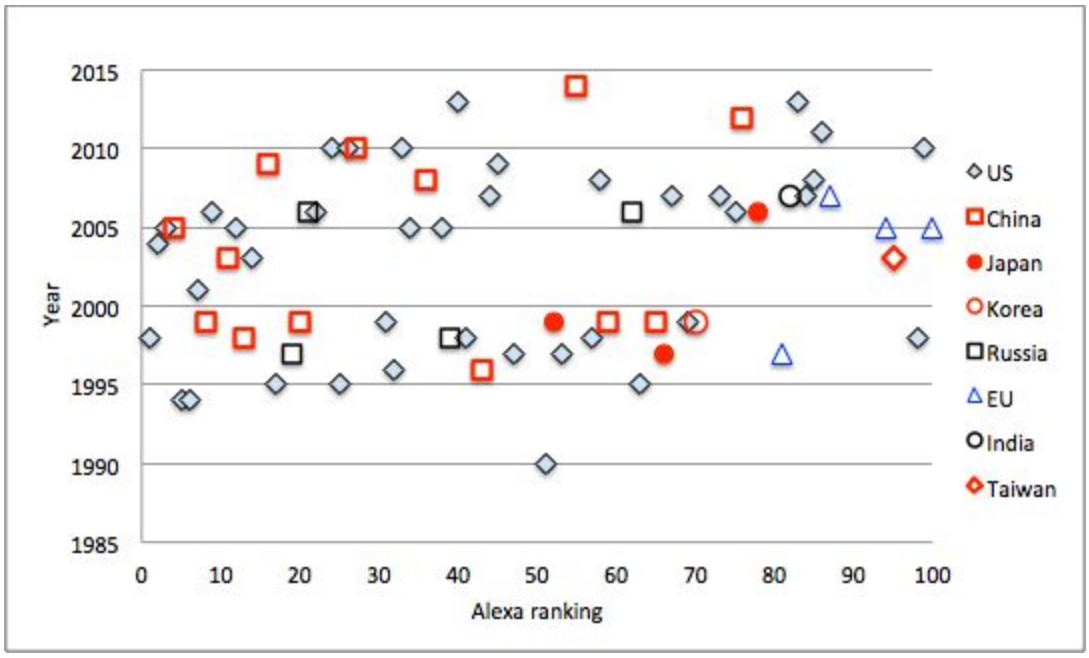


Figure 1. Year of creation and ranking of the top 100 global websites[8]

The large number of China-based platforms in the global top 100 suggests that the size of the domestic market is a key determinant of the global influence of a website. But, for a sizable share, the visits of these websites originate from Hong Kong and Taiwan, and to a lesser degree from Japan and Korea, or from ethnic Chinese communities in ASEAN countries, Australia, Canada, and the United States. In the meantime, the presence in the global top 100 of platforms based in relatively small economies such that as South Korea and Taiwan indicates that successful strategies can be based on the development of cross-border information flows in East Asia; in particular, the Chinese market is explicitly targeted.

[8] Source: Alexa for the ranking, Wikipedia for the year of creation.
Note: excluding local versions of major U.S. platfoms and news websites; companies or websites established before 1990 omitted; information unavailable for popads.net: global rank 93.

4. Cross-border information flows in East Asia

Although available data indicate that a number of websites based in China, Hong Kong, Japan, Korea, and Taiwan, receive a sizable number of visits from several ASEAN countries, the present study is restricted to cross-border flows among the five East Asian countries/territories. Cross-border information flows in East Asia, are assessed using two types of indicators:

- on the one hand, the number of foreign websites in the local top 25 by number of visits;
- on the other hand, the ranking of local websites in other East Asian countries/territories.

Table 2, which indicates the number of foreign websites in the local top 25 by number of visits, provides evidence of the relatively high degree of integration of East Asia, probably higher than Europe, from the viewpoint of information flows. Some asymmetries can be observed in the exchanges: Korean websites exert some influence in Japan, with Naver as the only non-US website in the Japanese top 25 (albeit only number 15), but Japanese websites are absent from the Korean top 25. The same remark applies for Taiwan vis-à-vis Hong Kong (5 Taiwanese websites in the Hong Kong top 25). Similarly, although Chinese websites are present in the top 25 in Hong Kong, Korea, and even in Taiwan, none of the websites based in these countries/territories figure in the Chinese top 100.

Table 2. Websites based in the US or in East Asia in the Top 25 of China, Hong Kong, Japan, Korea, and Taiwan (by number of visits from each country/territory)

	CN	HK	JP	KR	TW
US	2	9	10	8	8
CN	23	4		2	2
HK		6			1
JP		1	14		
KR			1	15	
TW		5			14
Total	25	25	25	25	25

Source: Alexa.

The fact that there is no Japanese website in the Chinese top 100, while no Chinese websites is present in the Japanese top 100 points toward a low degree of interaction between China and Japan, since Baidu stopped its Japanese version. Language is unlikely to be a strong barrier, as evidenced by the fact that two China based websites are listed in the Korean top 25 (with a Korean language interface). Besides, the Korean based website, which is number one in

Korea, is also in the Japanese top 25 (in Japanese language version), and a Japanese website is in the Hong Kong top 25 (in Chinese language version). Linguistic similarities between Japanese and Korean languages facilitate the adaption of the original monolingual format to a bilingual interface; but considerable syntax differences between Chinese and Japanese, or Korean, do not prevent the development of multilingual versions of major websites including the three East Asian languages. Differences in terms of global influence of the main East Asian websites are only partly due to the respectives sizes of the local market. The total number of visits, at the global level, of local top 25 websites tends to be higher in Japan, and is higher in Japan than in Korea; but several Taiwan-based websites manage to have a number of visits almost as high as the Japanese ones. This is mostly due to their influence in China and Hong Kong, and among ethnic Chinese communities in ASEAN countries and in the United States.

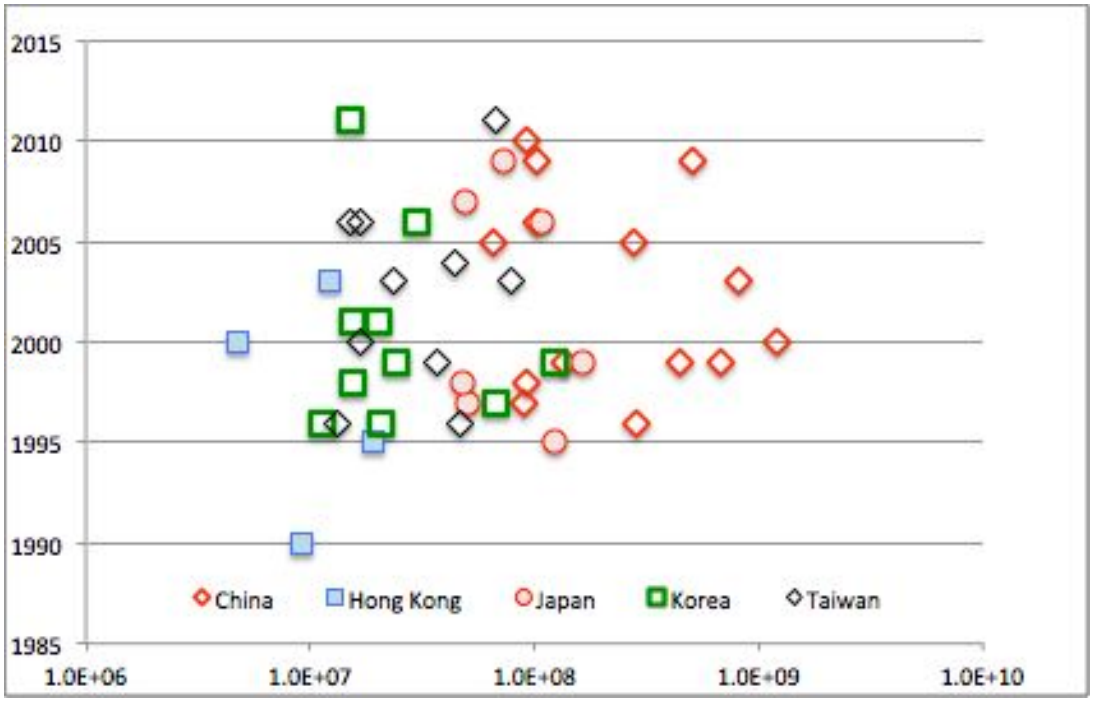


Figure 2. Number of global visits of top 25 websites in China, Hong Kong, Japan, Korea, and Taiwan[9]

Table 2 allows assessing the balance of power on the Asian web in each country under consideration. As high-ranked platforms drive an important traffic, the number of national platforms listed in the top 25 of a given country enables gauging the share of visits remaining on domestic soil. In addition, we can see for each country how many foreign platforms are of importance and, as a result, the degree dependency of a country on foreign systems.

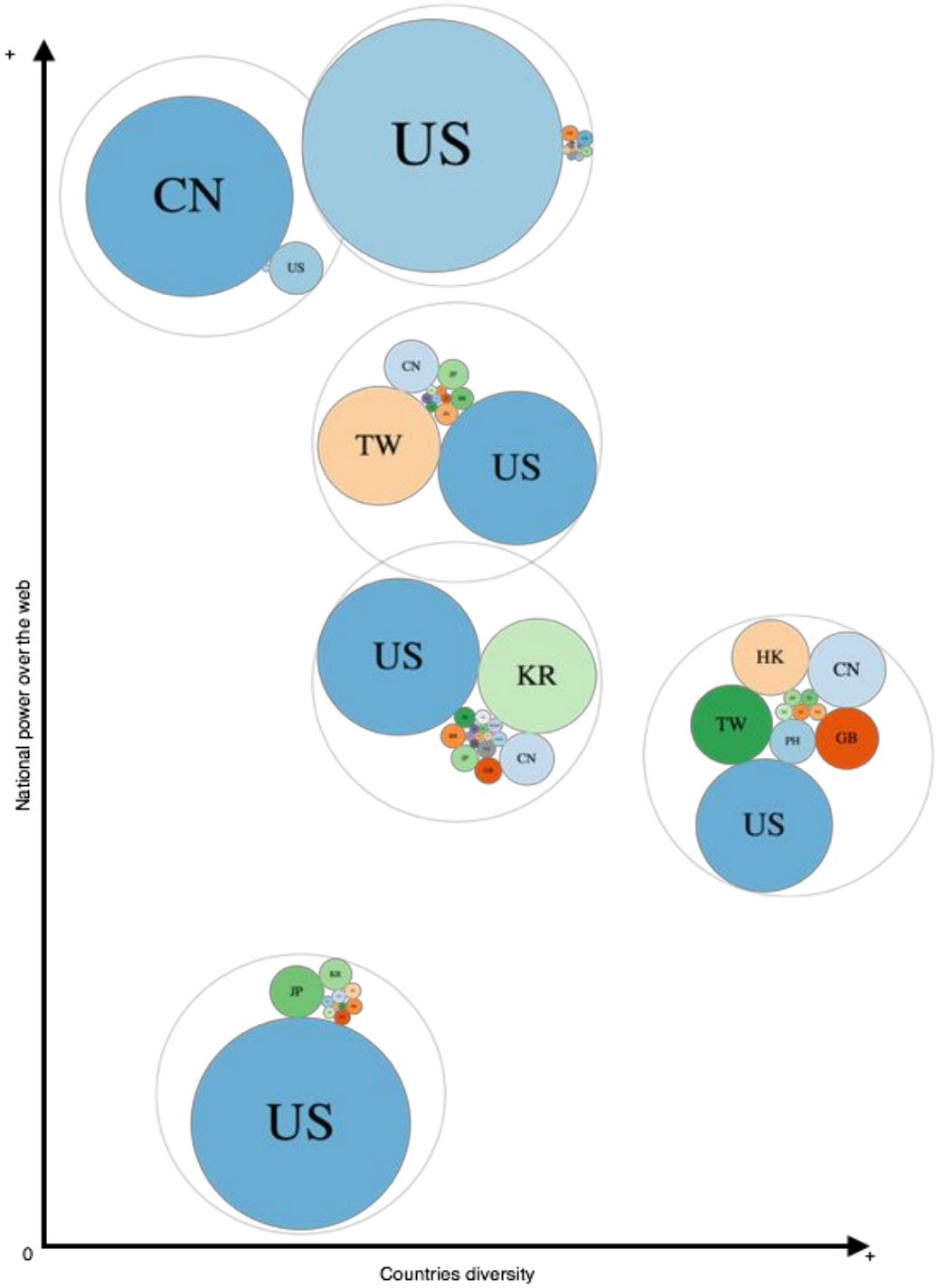
[9] Source: Alexa for number of visits; Wikipedia for year of creation.

Table 2. Ranking of top 25 websites by visits in China, Hong Kong, Japan, Korea, and Taiwan[10]

rank	CN	HK	JP	KR	TW
1	**baidu.com**	google.com.hk	yahoo.co.jp	**naver.com**	pixnet.net
2	**qq.com**	google.com	google.co.jp	google.co.kr	google.com.tw
3	**taobao.com**	facebook.com	amazon.co.jp	google.com	facebook.com
4	sina.com.cn	youtube.com	youtube.com	**daum.net**	google.com
5	weibo.com	yahoo.com	google.com	youtube.com	yahoo.com
6	hao123.com	**baidu.com**	fc2.com	amazon.com	**ettoday.net**
7	**tmall.com**	**taobao.com**	rakuten.co.jp	facebook.com	youtube.com
8	sohu.com	wikipedia.org	nicovideo.jp	tistory.com	gamer.com.tw
9	gmw.cn	discuss.com.hk	facebook.com	ppomppu.co.kr	udn.com
10	360.cn	**pixiv.net**	twitter.com	11st.co.kr	xuite.net
11	tianya.cn	nextmedia.com	livedoor.jp	gmarket.co.kr	ltn.com.tw
12	soso.com	aastocks.com	wikipedia.org	clien.net	**life.com.tw**
13	xinhuanet.com	**qq.com**	dmm.co.jp	donga.com	eyny.com
14	jd.com	**gamer.com.tw**	ameblo.jp	blog.me	momoshop.com.tw
15	sogou.com	**amazon.com?**	**naver.jp**	ebay.com	**teepr.com**
16	google.com.hk	hsbc.com.hk	kakaku.com	wikipedia.org	wikipedia.org
17	china.com	etnet.com.hk	goo.ne.jp	auction.co.kr	appledaily.com.tw
18	163.com	**life.com.tw**	t.co	saramin.co.kr	mobile01.com
19	china.com.cn	**teepr.com**	doorblog.jp	**baidu.com**	ruten.com.tw
20	amazon.cn	apple.com	**pixiv.net**	yahoo.com	pchome.com.tw
21	youku.com	**bomb01.com**	blog.jp	**aliexpress.com**	**bomb01.com**
22	alipay.com	**Tmall.com?**	xvideos.com	ddanzi.com	**baidu.com**
23	chinadaily.com.cn	linkedin.com	2ch.net	interpark.com	ptt.cc
24	cntv.cn	hkgolden.com	dmm.com	chosun.com	blogspot.tw
25	tudou.com	**ettoday.net**	livedoor.biz	twitter.com	**taobao.com**

[10] Source: Alexa.
Note: local websites in black; bold black fonts for East Asian local websites also ranked in the top 25 in at least another East Asian country/territory; foreign websites in color: blue for U.S. based websites, red for Chinese, purple for Japanese, green for Korean, and magenta for Taiwanese ones. See appendix for further information on local websites.

Figure 3. Market share of local websites and degree of diversity of influence of foreign websites in China, Hong Kong, Japan, Korea, Taiwan, and the US



We further investigate these two features by measuring the amount of visits a platform attracts from a country. We identify the countries influencing the web landscape of a given country and assess the importance of the dependency on foreign countries.

Figure 3 presents the outcomes of this investigation. The specific figure for each country is given in the Appendix 2. For each country, we represent its influence on its own web - i.e. the volume of visits its platforms attract - and the influence of foreign countries. Countries are displayed as circles whose diameter represents the influence of a country. We then rank countries according to two dimensions: the "national power over the national web" and the "degree of diversity of influence of foreign websites".

This analysis reveals three patterns of balance of power on the web. Firstly, a country can more or less dominate its web landscape, as in China - or the US. The "national power over the web" is thus really high when the "degree of diversity of influence of foreign websites" is really low. On the contrary, a web landscape can be almost completely dominated by foreign platforms as in Japan. The "national power over the web" drops and the "degree of diversity of influence of foreign websites" remains quite low as a single foreign country centralizes web visits.

Two middle terms exist between these two ends of the spectrum. First, the balance between national and foreign platforms from a single country can be even - as in Korea and Taiwan. Then, the balance between national platforms and foreign platforms from several countries may be even, as in Hong Kong.

Several points may explain the distinctive features of these patterns. The size of the market and cultural features - such as a multilingual or multicultural population - seem to be of importance. China and Hong Kong respectively exemplify each point. Then, political and economical incentives, or local legislations, probably drive the blossoming of platforms. The Korean authorities, for instance, are well-known for partnering with local platforms[11] or forbidding foreign services - such as uberPop - while fostering the development of national competitors[12].

Eventually, we observe an important cross-border data flow in Asia. In this respect, China is a regional power as its platforms influence all the countries we study. Yet, given the predominance of the US, focusing on Asia does not allow capturing the overall economy of dataflows.

[11] http://www.koreatimes.co.kr/www/news/tech/2015/06/133_178714.html
[12] http://kojects.com/2015/10/12/kakaotaxi-revolutionizing-koreas-taxi-service/

5. Conclusion

The global and local ranking of websites by number of visits presented above provides evidence of the importance of China based websites, both at the global level and in the East Asian region. But cross-border flows give only an incomplete picture of the East Asian integration in terms of data flows. Two additional dimensions, both related to the ownership of intermediation platforms, should be added to the analysis of cross-border relations.

First, the global and local rankings should be adjusted by taking into account financial linkages shaping the local market structure. By measuring the ranking on the basis of the number of visits of individual websites, we tend to underestimate the degree of market concentration. The East Asian internet landscape is in fact characterized by a dual structure: on the one hand, a tight oligopoly of increasing global platforms, particularly in China and Korea; on the other hand, a myriad of smaller websites aiming at increasing their market share and the scope of their activities from an initial entry strategy based in a niche market.

The Chinese market is in fact dominated by three groups controlling among them ten of the top 25 Chinese based websites: Alibaba group (controlling in particular Taobao, Tmall, Alipay, and Alibaba; and involved also with a minority participation in China Weibo), Baidu group (the two main platforms are Baidu and Hao123), and Tencent group (the three main platforms are Qq, Jd and Sogou). The consolidated size of Alibaba group, measured in number of visits, is more than two times the size for the flagship website taobao.com (number 3 in China). By the same metric, the size of Tencent group can be estimated as 1.6 that of qq.com (number 2 in China), and the size of Baidu group 1.4 that of baidu.com (number 1 in China).

In Korea, two groups are dominant: NHN corporation, which operates Naver (number 1 in South Korea) and other websites such as Hangame (online gaming), while expanding in Japan following the acquisition of Livedoor in 2010 (¥6.3 billion); Daum group, which operates in particular Daum and Tistory websites (Numbers 2 and 3 in South Korea, respectively). Such a measure of the actual concentration does not drastically affect our assessment of Chinese influence in East Asia, or the rest of the world, but it highlights that Korean companies operating intermediation platforms have a stronger influence in Japan than what could be measured by the presence and market share of foreign based websites in the local top 25.

Second, the influence of foreign Asian or non-Asian minority shareholders in Asian companies operating major platforms is a reality that cannot be overlooked. Although foreign ownership and foreign equity participation of companies operating intermediation platforms can be subject to sudden changes in corporate strategies, several acquisitions by big global players have shaped local East Asian markets during the last decade. In Korea, the acquisition of gmarket (gmarket.co.kr) by Ebay, in 2009, for $1.2 billion[13] has resulted in a concentration in

[13] http://www.bloomberg.com/apps/news?pid=newsarchive&sid=asyO3.3yVdnE

online shopping. The market power of Chinese websites on their domestic market should also analyzed by taking into consideration equity participation by Japanese and U.S. investors. In particular, Softbank (the leader among Japanese mobile and internet service providers) and Yahoo! own 32% and 15% of Alibaba, respectively.

In addition, the limited influence of Japanese companies on the domestic market of intermediation platforms appears under a different light when the ownership by Softbank in 36% of Yahoo! Japan (number 1 in Japan) is taken into account. Although Softbank does not own as majority shareholder any platforms ranked in the top 25, the company is a major player in the East Asia intermediation platform industry. This is the result of the long term vision that started by an initial investment in Alibaba of $20 million in 2000, and extended in a consistent strategy of minority participation with a portfolio of 30% to 40% of the shares in a various internet firms in Asia[14]. Softbank's investment strategy is also changing the nature of the Japan-Korea relationships. In particular, the investment of Softbank in Coupang disrupts Korean online shopping.[15] These developments suggest that, when analysing the expansion of intermediation platforms in East Asia, and the dynamics of cross-country linkages, the actual owners of the industry and the possible complementarities between wireless operators and websites should be also taken into account.

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Appendices

Appendix 1. Local platforms in the top 25 in China, Hong Kong, Japan, Korea, and Taiwan ranked by number of consultations

Table A-1. Global presence of websites based in China listed in the local top 50 by number of consultations (number of countries with presence in the local Top 25, 50, and 100)

	Rank Global	Rank Local	Global Top25	Global Top50	Global Top100	Consultations (global)	Activity
baidu	4	1	3	0	1	1214450000	Search engine
qq	8	2	1	2	0	669517000	Portal
taobao	11	3	2	1	0	810995000	Online shopping
sina	13	4	0	0	2	501890096	Blogging
hao123	21	6	1	0	2	447096000	Search engine
alibaba	30	44	22	18	11	501419296	E-commerce and portal
sohu	45	8	0	0	0	285215000	Portal
360	54	10	0	0	0	276442000	Software and technology
gmw	55	9	0	0	0	154778000	News (Guangming Daily)
tianya	63	11	0	0	0	137734000	Internet Forum
soso	76	12	0	0	0	233972000	Search engine
xinhuanet	83	13	0	0	0	118149400	News
sogou	99	15	0	0	0	93412000	Search engine
jd	100	14	1	0	0	92609000	Online shopping
163	103	18	1	0	0	90287000	Portal
china	107	17	1	0	0	138295000	Portal
cntv	108	24	1	0	0	103258400	News
youku	122	21	1	0	0	102360000	Video sharing
chinadaily	132	23	1	0	0	87379000	News
tudou	151	25	1	0	0	65369000	Video sharing

Source: Alexa for ranking and consultations, Alexa and Wikipedia for type of activity.

Table A-2. Global presence of websites based in Hong Kong listed in the local top 25 by number of consultations (number of countries with presence in the local Top 25, 50, and 100)

	Rank Global	Rank Local	Global Top100	Global Top50	Global Top100	Consultations (global)	Activity
discuss	1431	9	0	1	0	12365000	Online forum
nextmedia	1617	11	0	1	0	9104500	News
aastocks	1834	12	1	0	0	8761600	News (stocks)
hsbc	2262	16	0	0	0	6673800	Online banking
etnet	3299	17	0	1	0	4594000	News
appledaily	629	17	1	0	0	19078000	News
hkgolden	3784	24	0	0	1	4764500	Online forum

Source: Alexa for ranking and consultations, Alexa and Wikipedia for type of activity.

Table A-3. Global presence of websites based in Japan listed in the local top 25 by number of consultations (number of countries with presence in the local Top 25, 50, and 100)

	Rank Global	Rank Local	Global Top25	Global Top50	Global Top100	Consultations (global)	Activity
fc2	51	6	0	0	0	165151000	Video sharing
rakuten	69	7	0	0	0	na	Online shopping
nicovideo	78	8	0	0	0	107573000	Video sharing
livedoor	101	11	0	0	0	123940	Video sharing
dmm	119	13	0	0	0	na	Pornographic films
ameblo	130	14	0	0	0	72957000	Social network
kakaku	184	16	0	0	0	49983000	Price comparator
goo	191	17	0	0	0	48366000	Search engine
doorblog	225	19	0	0	0	46141000	Blogger
pixiv	215	20	0	0	0	48562000	Social Network
blog	298	21	0	0	0	36245000	Blogger

Source: Alexa for ranking and consultations, Alexa and Wikipedia for type of activity.

Table A-4. Global presence of websites based in Korea listed in the local top 25 by number of consultations (number of countries with presence in the local Top 25, 50, and 100)

	Rank Global	Rank Local	Global Top25	Global Top50	Global Top100	Consultations (global)	Activity
naver	68	1	0	0	0	124241400	Portal
daum	135	4	0	0	0	67702000	Portal
tistory	368	8	0	0	0	29683000	Blogging
ppomppu	398	9	0	0	0	28267000	Online shopping
11st	565	10	0	0	0	20920000	Online shopping
gmarket	488	11	0	0	0	24371000	Online shopping
clien	584	12	0	0	0	20334000	Online shopping
donga	579	13	0	0	0	20607000	News
blog	651	14	0	0	0	18522000	Blogging
auction	790	17	0	0	0	15685000	online shopping?
saramin	801	18	0	0	0	15500000	Job announcements
ddanzi	1604	22	0	0	0	15244100	News
interpark	1167	23	0	0	0	11218000	Online auction
chosun	1137	24	0	0	0	11352000	News

Source: Alexa for ranking and consultations, Alexa and Wikipedia for type of activity.

Table A-5. Global presence of websites based in Taiwan listed in the local top 25 by number of consultations (number of countries with presence in the local Top 25, 50, and 100)

	Rank Global	Rank Local	Global Top25	Global Top50	Global Top100	Consultations (global)	Activity
pixnet	93	1	2	1	0	79753000	Blogging
ettoday	144	6	2	0	1	67702000	News
gamer	245	8	2	0	0	46141000	Online video game
udn	316	9	0	0	1	36561000	News
xuite	308	10	0	3	0	44127000	Blogging
ltn	433	11	0	0	0	26293000	News
life	213	12	3	1	0	48366000	
eyny	515	13	0	1	1	23356000	Blogging
momoshop	727	14	0	0	0	16846000	Online shopping
teepr	403	15	3	0	0	27966000	News
mobile01	764	18	0	0	0	16886000	Blogging
ruten	884	19	0	0	0	14895000	Online shopping
pchome	951	20	0	0	0	13375000	Portal
bomb01	653	21	1	1	1	18474000	Blogging

Source: Alexa for ranking and consultations, Alexa and Wikipedia for type of activity.

Appendix 2. Top 25 websites in China, Hong Kong, Japan, Korea, and Taiwan by number of visits

Figure 2-1. Top 25 websites in China

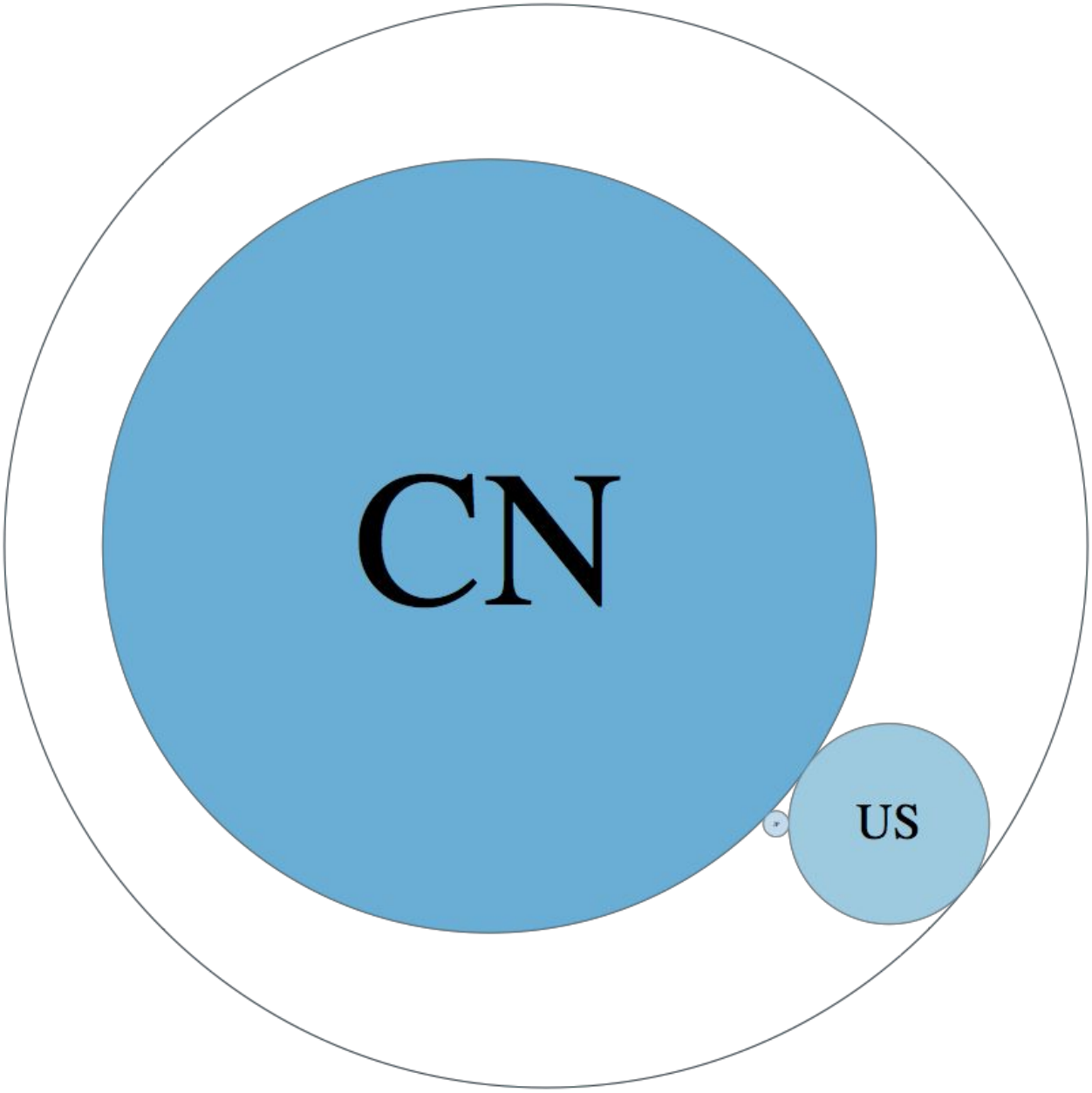

Figure 2-2. Top 25 websites in Hong-Kong

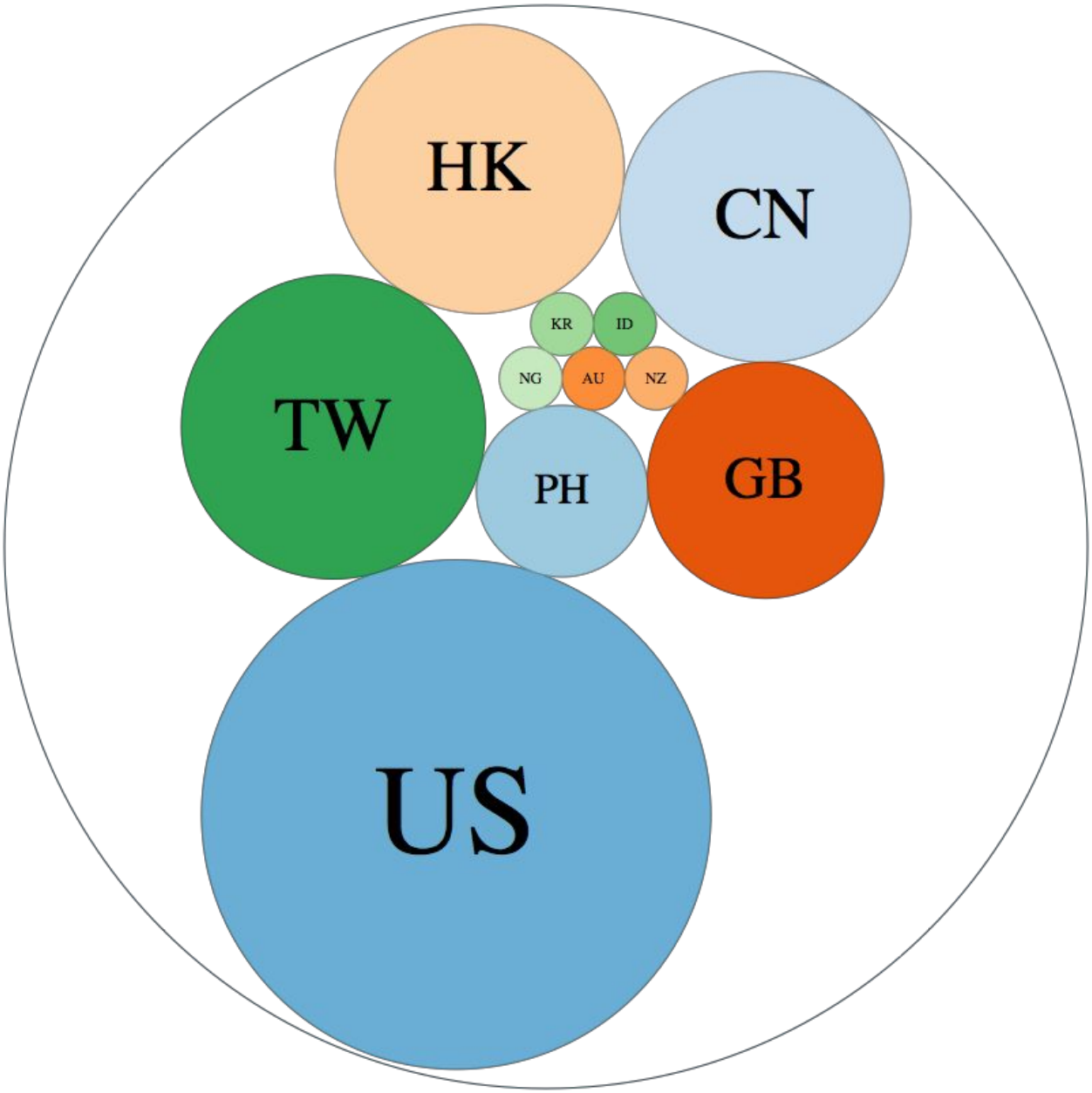

Figure 2-3. Top 25 websites in Japan

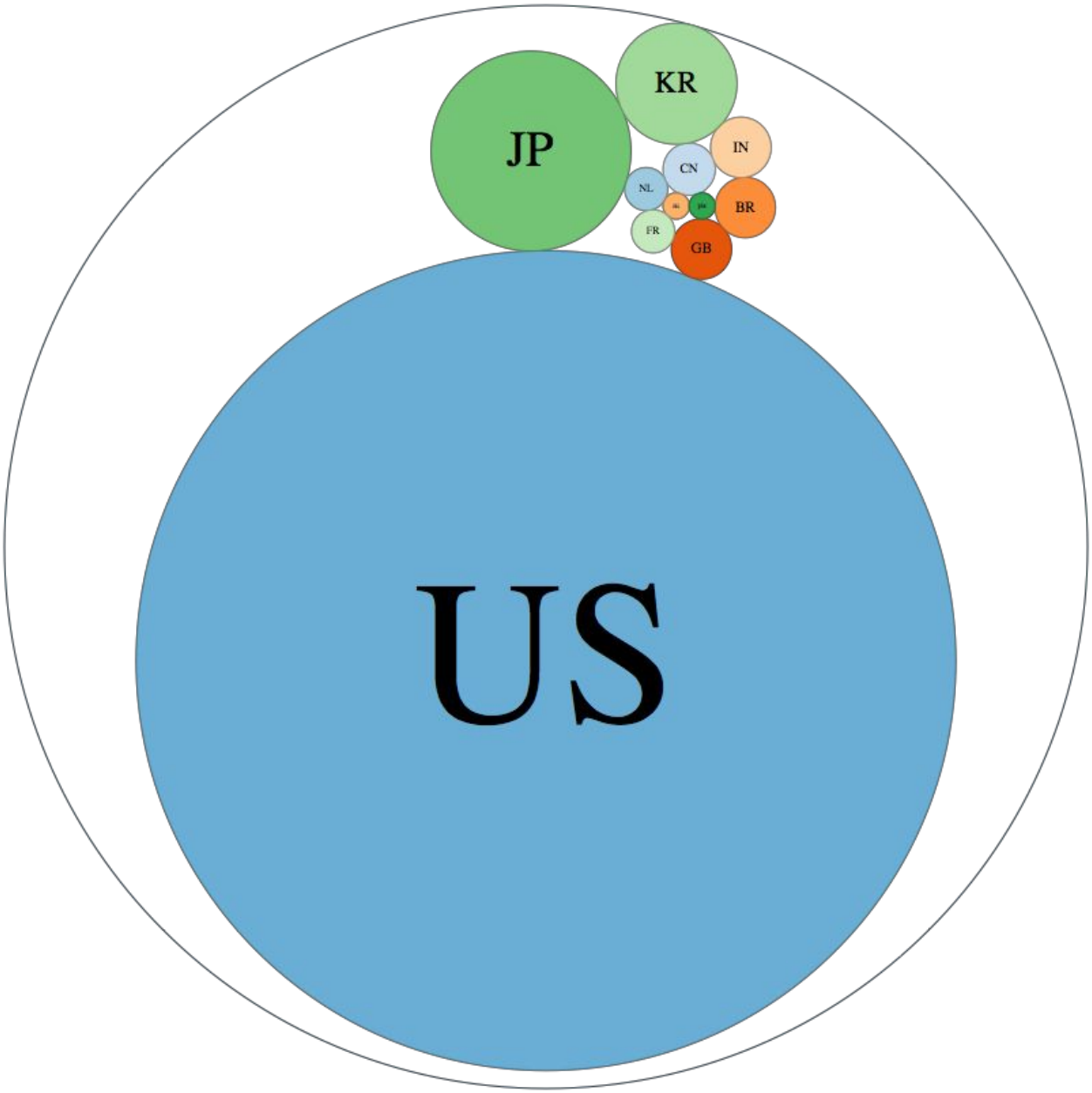

Figure 2-4. Top 25 websites in Korea

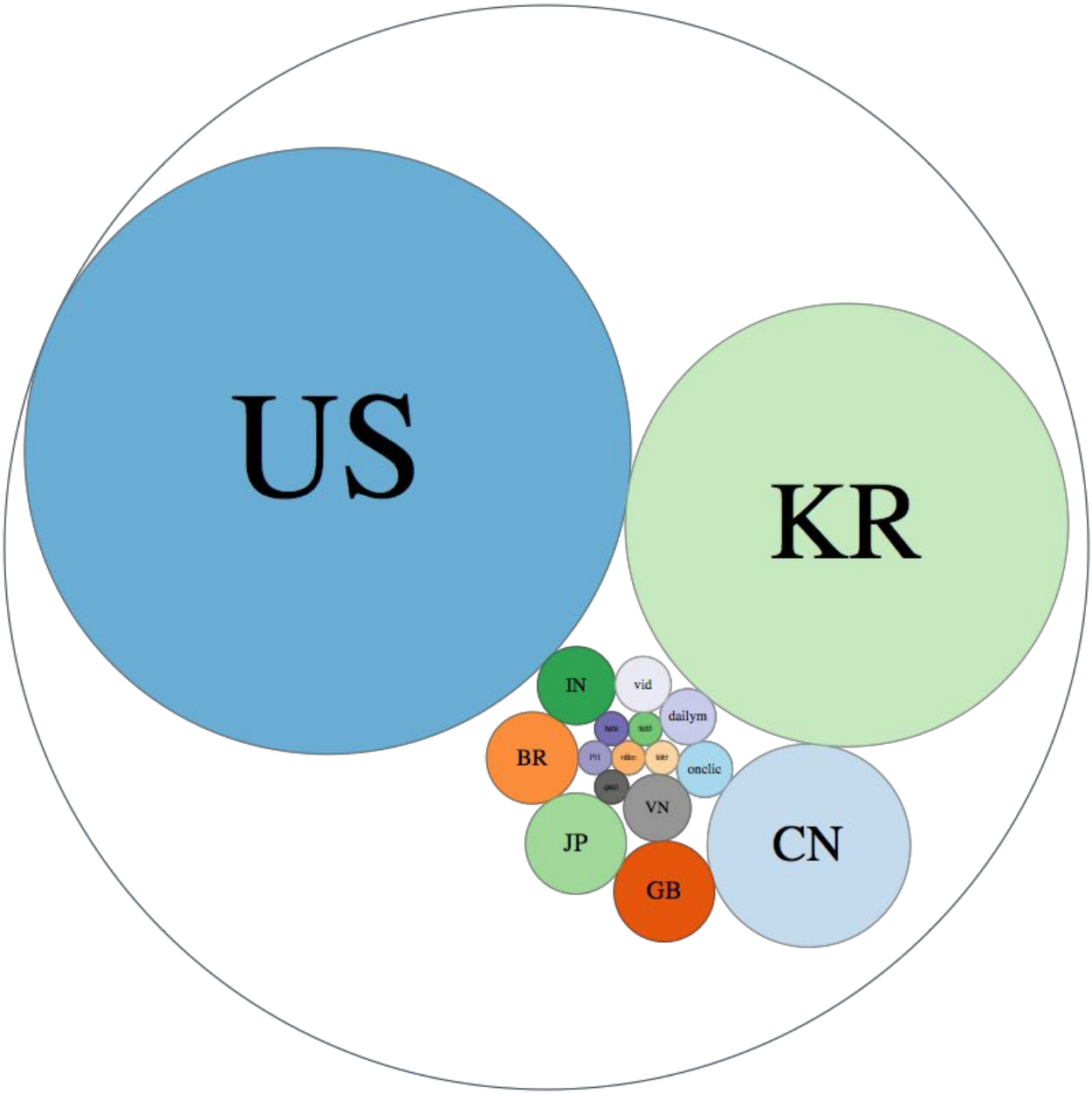

Figure 2-5. Top 25 websites in Taiwan